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CHEMISTRY & CHEMICAL TECHNOLOGY

Chem. Chem. Technol., 2018, **Chemical**
Vol. 12, No. 2, pp. 221–228 **Technology**

EMPIRICAL MODEL FOR OPTIMIZING SHEA BUTTER EXTRACTION IN AN UNBAFFLED VESSEL EQUIPPED WITH AN IMPELLER

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https://doi.org/10.23939/chcht12.02.221

Abstract. The yield of Shea butter extracted in an unbaffled vessel equipped with an impeller was optimized by varying kneading time, kneading temperature and kneading speed using response surface method (RSM). Helical shaped impeller was mounted on a variable speed Tecmix TM 1100 kneader to knead the Shea paste. Minitab 16.1 software was used for the design and optimization of the process variables. The study indicated that the temperature and speed were highly significant on Shea butter oil yield with p-values of 0.001 and 0.002, respectively. The residual plots of the yield show that the adopted model was efficient because the experimental and the predicted yields for the extraction are very close. It
was concluded that the model to be adequate.

Keywords: Shea butter, optimization, yield, surface response method, Shea tree.